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V. *An Account of some Experiments made with the Bile of Persons dead of the Plague at Marseilles, with what appear'd upon the Dissection of the Bodies; as likewise some Experiments made with the Bile of Persons dead of other Diseases. By the Learned and Curious Dr. Deidier, Professor of Physick in the Faculty of Montpellier. Communicated by John Woodward, M D. Prof. Med. Gresh. and R. S. S.*

Experiments made upon the Bile of Persons dead of the Plague.

Experiment I.

THE Human Bile, taken from the Gall-Bladder of the Bodies of those that dy'd of the Plague at *Marseilles*, has been always found to be of a black and greenish Colour. It has become constantly of a lasting Grass Green upon the mixing of Spirit of Vitriol with it; and always very yellow when we mixt Oil of Tartar *per deliquium*, or the Alcalous fixt Salt of the same dissolv'd in a sufficient Quantity of Water. These two Colours, green, and yellow, have continued for whole Months. The said Bile has become of a black Colour, like Ink, but soon fading, by the Affusion of Spirit of Nitr

Experiment II.

The Bile, taken from the Gall-Bladder of the Bodies of those that dy'd of the Plague, having been
pour'd

pour'd into a Wound made on purpose in different Dogs, has render'd them thereupon melancholy, drowzy, and without caring to eat- All these Animals dy'd in three or four Days with the essential Marks of the true Plague, declared by Buboes, Carbuncles, and gangrenous Inflammations in the *Viscera*, in the same manner as in the human Carcasses from whence the Bile was taken.

Experiment III.

A Drachm of the said pestiferous Bile having been mix'd with two Ounces of Fountain Water made lukewarm, and injected into the Jugular Vein of several Dogs, has render'd them presently drowzy, and has kill'd them in four Hours, with gangrenous Inflammations, the Heart stuffed full of black thick Blood, the Liver swell'd, and the Gall Bladder full of green Bile.

Experiment IV.

The same Quantity of Bile, injected by the Crural Vein, has produc'd in the Dogs a Heaviness in about an Hour. They have had such a strong loathing of their Food, that they would not eat or drink the least matter after the Injection was made. They piss'd frequently, especially if they were stirr'd. On the third Day there appear'd considerable Tumors under the *Axilla*, and on their Thighs, about 3 Inches from the Wound. The Wound turn'd to a Gangrene, and the Creature usually dy'd on the fourth Day, with all the Marks of the Plague.

Experiment V.

A Dog, of the Hospital at the *Mail*, in *Marseilles*, who follow'd the Surgeons when they went to dress the Sick, us'd greedily to swallow the corrupted Glands, and the Dressings charged with Pus that they took off the Plague-Sores; he lick'd up the Blood that he found spilt on the Ground in the Infirmary; and this he did for about three Months, and was always well, gay, brisk, full of Play, and familiar with all Comers. We injected into the right crural Vein of this Dog about a Drachm of the pestiferous Bile, mix'd with two Ounces of warm Water. He dy'd the fourth Day, as the others did, with a Bubo on the wounded Thigh; on which likewise there were two Carbuncles, and the Wound gangren'd. What we took particular Notice of in this Dog was, that after the Injection, both when he was living, and after he was open'd, when dead, he had a very stinking Smell, which we did not observe in any of the others. He had moreover a considerable Hæmorrhage from the Wound, the Night before he dy'd, having struggled hard to escape out of his Confinement.

Experiment VI.

The 2d of *May* having injected about a Drachm of humane Bile, taken from Persons dead of the Plague, mix'd with two Ounces of warm Water, into the Crural Vein of a Dog, the Creature was presently drowzy, refus'd his Food, and dyed about the third or fourth Day after the Injection, with all the inward and outward Marks of the Plague that the others had.

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Experiment VII.

The sixth of the same Month we collected the Bile of this Dog dead of the Plague, and injected it by the Crural Vein into the Blood of another Dog, who, presently after the Injection, had Convulsive Motions all over him, which were follow'd by a Lethargick Heaviness. On the second Day after the Injection, there appear'd a Carbuncle upon the great Pectoral Muscle on the right side. The third Day there arose a considerable Bubo on the Thigh; and the Dog dy'd the same Day. Upon opening the Body, we found the fore part of the Breast all gangren'd under the Teguments; and, in the inward parts, the *Viscera* were full of black clotted Blood; as in all the rest. The outward Surface of the Lungs was all Purple; The Heart was swelled as big again as usual, with the four Cavities full of black clotted Blood. The Creature had liv'd three Days from the Injection without eating or drinking.

The 10th of *May* we injected the Bile of this second Dog into the Crural Vein of a third Dog, who was thereupon seiz'd with violent Convulsions, and different convulsive Motions, for about half a quarter of an Hour. When he was recover'd from these, he appear'd dull, and sleepy; he vomited with violent Strainings. The Vomiting was followed with a Hick-up. He eat a little boiled Meat, having fasted a good while before the Injection was made; but he vomited it up two Hours after he had taken it. He died the third Day with the same Symptoms of the Plague that the other Dogs had.

*The State of the Bodies of Persons dead of the Plague,
from which we took the Bile for the Experiments
beforemention'd.*

The first Body.

ONE *Belesfleur*, a Soldier, of 25 Years of Age, of a strong robust Constitution, having a flat-tish Bubo growing on the hollow of the right Groin, dy'd delirious. We found in his Carcass the Heart of an extraordinary Bigness, stuffed with black clot-
ted Blood. His Lungs covered with a livid Purple; and sticking a little to the *Pleura*. The Liver was double the natural Bigness, and stuffed with a thick Blood. The Gall Bladder was full of a black and greenish Bile. The *Dura* and *Pia Mater* by their Blackness seem'd to have been seized with a gangrenous Inflammation. The inward Substance of the Brain was sprinkled over with an infinite number of small livid Spots.

The second Body.

Mary Pisanne, aged 30 Years, of a sanguine Habit, had a Bubo under her right Arm-pit, with a *Delirium* that was followed by a mortal Sleepiness. In the opening of her Body, we remark'd, that the Lungs were in their natural State. The Heart was of a prodigious bigness, full of black coagulated Blood, with the left Auricle livid and gangrenous. The Liver, which was much enlarged, was all cover'd with Purple;

ple; and the Gall Bladder fill'd with a black and greenish Bile. The Head was not open'd.

The third Body.

Peter Moulard, of a tender, feeble Constitution, about 14 Years of Age, had a *Bubo* under the hollow of the right Groin very deep, and that never came well out. He became delirous with Convulsions, in which this Child dy'd. We found in his Body his Heart of double the bigness that it ought naturally to be, containing a black thick Blood: His Lungs were besprinkled with livid Spots. The Gall Bladder full of a black and greenish Bile. The Head was not open'd.

The fourth Body.

Jean Raynaud, Cook, aged about 25 Years, of a melancholy Temperament, had the whole Habit of his Body cover'd with a purple livid Colour, and a *Bubo* under his left *Axilla*; he dy'd in a delirous Phrenzy. We found in his Carcass two Abscesses, one between the Teguments and the left great pectoral Muscle, and the other in the Breast between the *Sternum* and the *Mediastinum*. His Heart was very large, fill'd with black thick Blood. The right Auricle was of the Breadth of three Inches; the left was in its natural State. His Lungs were cover'd with little livid Spots, remaining soft and pliant, without any hardness in the Substance of them. The Liver was larger and harder than ordinary, and was also full of livid purple Spots; and the like were found in the Substance of his Brain, of which all the Vessels were fill'd with black thick Blood.

The fifth Body.

Jaques Audibert, aged about 35, of a melancholy Complexion, four Months after he had been cured of the Plague, the Mark of which was a *Bubo* in the fold of the right Groin, which came well to a Suppuration, was attack'd afresh with three Carbuncles; one in the middle of the Arm, and the other two in the fore Arm. He had but little Fever, with some small Sickneſs at Stomach; but a *Delirium* coming of a sudden, carried him off. Upon opening his Body, we found his Heart of a prodigious Bigneſs. The right Auricle being of the breadth of five Inches; and the left of three. We found a little Impoſtume upon the Body of the *Aorta*. The Lungs were cover'd with livid Spots, and the Liver appear'd gangrenous. The Gall Bladder was of a very black Colour. The *Duodenum* and the *Rectum* were inflam'd. We did not open the Head.

The ſixth Body.

Venture Cajole, about 40 Years of Age, of a melancholy Temperament, dy'd without any outward Eruption on the third Day, of a violent Fever, with a Sleepineſs. We found in the Body the *Mediaſtinum* torn towards the upper part. The *Pericardium* was of a livid Colour. The Heart larger than in its natural State, by the ſwelling of its Ventracles full of black thick Blood, as in the other Carcaſſes. The Liver alſo was very large, and of a livid Colour, with a Carbuncular Puſtule on the ſide of the Gall Bladder; this was fill'd with very black Bile.

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The seventh Body.

Margueritte Bachaire, aged 18 Years, of a lively vigorous Constitution, having two Carbuncular Pustules on the middle and inside of the Thigh, with a sharp Pain in the Head, dy'd delirious. We found in her Body the Coverings of the Brain of a blackish red; The Cortical part of a livid Colour, and the Medullary sprinkled with a few black Spots; The Heart of a prodigious Size, full of a thick black Blood: The Liver also very large, and the Gall Bladder very full of a black and green Bile. There were several livid Spots upon the Surface of the Intestines.

The eighth Body.

Louise Belingere, 20 Years of Age, having a *Bubo* in each fold of the Groin, died very suddenly without any dangerous Symptoms. We found in her Carcass the Heart all cover'd with a livid Purple, much larger than natural, fill'd with thick black Blood, having a *Polypus* in each Ventricle. The Lungs were in their natural State. The Liver of a prodigious Greatness; and the Gall Bladder full of Bile, of a deep green Colour.

The ninth Body.

One nam'd *Rampeau*, a Peasant, aged about 20 Years, of a sanguine robust Constitution, having had a Carbuncular Parotide for the Space of eight Days, accompany'd with a burning Fever, was carried to the Hospital the 2d of May, where he dy'd the 5th. We found the outward part of the left side of the Lungs cover'd
with

with a livid Purple. The Heart was of double th natural Bigness, having scarce any Blood in the V en tricles, whose Cavities were fill'd each with a large *Polypus*, that on the right side having dilated the Au ricle to the breadth of four Inches. The Liver also was larger than ordinary, and the Gall Bladder was full of a black and green Bile.

The Experiments, and the opening of the Bodies mentioned above, were made in the Hospital at the *Mall*, and in the Apothecary's Shop of the Reverend the Reformed Fathers of *Marseilles*, during the Months of *February, March, April, May*, in Company of Mess. *Roberts and Ribeaud*, Doctors of Physick.

*The following Experiments were made at Montpe-
lier, in the Hospital of St. Eloy, during the
Months of September, October, and Novem-
ber, in company with Mons. Fizes, Dr. of Phy-
sick, and Professor of the Mathematicks, and
Messieurs Duli and Morel, young Surgeons of
the said Hospital.*

A Soldier, between the Age of 20 and 25, of a lively brisk Temper, being sick in the Hospi- tal of *St. Eloy* of an ordinary malignant Fever, died about the 15th Day by a Defluxion upon his Breast. His Lungs were found very much blown up, fil- ling all the Cavity of the Breast, and adhering to the *Pleura*. Having remark'd that the Bile in the Gall- Bladder was of a bright Grass green Colour, we ga- ther'd it for the following Experiments.

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This Bile, being mingled with four Ounces of warm Water, was part injected into the Jugular Vein of a Dog, and a Compress soak'd in the rest of the Liquor was applied to the rest of the Wound. The Creature thereupon appear'd heavy and sleepy, and would neither eat nor drink; the third Day he eat and drank willingly. The Compress falling off the fourth Day, the Wound was diminished one half, and was healed by little and little, and the Dog grew perfectly well.

The eighth Experiment.

A Peasant of about 50 or 60 Years old, of a melancholy Temperament, had been near a Month in the Hospital with an ordinary malignant Fever, having alternatively a *Delirium* and a Sleepiness. After his Death, the Bile was found extreme thick, and black as Ink, and a great deal of it. We put about a Drachm in a Wound made for that purpose on the outer part of the right Thigh of a Dog, thrusting in Pledgets dipt in the said Bile diluted, into the Wound. There did not appear any Change in the Dog. We made him swallow some of the same Bile, without losing his Appetite; and seeing he was like to do well, we left the Wound to it self, which heal'd in fifteen Days only by the Dog's licking it.

The ninth Experiment.

Being willing to inject some of the same Bile into the Crural Vein of another Dog, and the Syringe being stop'd by the too great Thickness of the said Bile, the Injection could not be made; wherefore we took a Pledget soak'd in as much of this Bile diluted, as it
E. could

could take up, and apply'd it to a fresh Wound made in the inside of the right Thigh. The Pledger was fasten'd within the Skin by some Needles. This Application produced no considerable Alteration in the Dog; he neither appear'd sleepy nor stomachless; but lick'd his Sore readily enough; and after the Pledger was fallen off, the Wound heal'd as in the foregoing Experiment.

The tenth Experiment.

About a Drachm of the same black Bile drawn from the same Carcass, and mixed with warm Water, was injected into the Jugular Vein of another Dog. The Creature was not incommoded thereby, but was as brisk as before the Injection, only he appear'd very thirsty and he drank with Greediness. The next Morning being willing to view the Wound, we found it black and dry, and the Dog becoming surly, bit one of the Assistants. The two Ligatures made for the Injection were taken away without our seeing any Blood to run out. We apply'd a Dossil, charged with the ordinary Digestive, and kept on by a Bandage; and about four Hours after the Dressing, we found the Dog dead, having lived 23 Hours after the Injection. Having opened him, we found that his Heart beat still with Violence, and the beating ceasing, there was no Blood either in the Ventricles or the Auricles. This Liquor crowded together in the great Vessels, appear'd of a lively red, and very fluid, without any of those Concretions that we constantly observed in all the Bodies that dy'd of the Plague. Here appeared neither internal nor external Marks of the Plague.

The eleventh Experiment.

An Inhabitant of *Montpellier*, aged about 30 or 35, very fat and robust, of a sanguine Complexion, having had a Fall upon the Pavement, had received a simple Wound on the upper part of his Forehead on the right side. This being neglected, brought on an *Erysipelas* all over his Face, which was accompany'd with a Swelling of the left *Parotide*. This appear'd and disappear'd thrice from Morning till Night. The *Erysipelas* came suddenly on; he grew delirious, and died after fifteen or twenty Days Illness, reckoning from the Fall. In the opening of the Body, we found a quantity of Water between the Skull and the *Dura Mater*. The Brain, which was firmer than ordinary, was a little red, and part of the *Pia Mater* covering the hinder part of that *Viscus*, appeared inflam'd. There was about half a Septier. of Water of a yellowish Colour, shed in the Cavity of the Breast. The great right Lobe of the Lungs was a little hard on the upper part. The Heart had a Polypose Concretion in each Ventricle: We found likewise two Pints of limpid Water got forth into the lower Belly. All the Fat of his Carcass was yellow. The Liver appeared to us a little swell'd; and the Gall Bladder almost empty, not having above two Drachms of yellow Bile in it. That Bile of this Carcass, mixed with two Ounces of warm Water, was injected into the Crural Vein of a Dog. The Creature eat and drank heartily after the Injection, and did not appear at all incommoded. The Wound bleeding much, we were obliged to fill it with restraining Powders, kept in by a Pledget and a convenient Bandage. Twenty four Hours after, the Dressing was taken away, the

Wound appeared black and dry. The Dog licking it, it suppurated the next Day, and afterwards became red and well colour'd ; and the Wound was less'n'd one half in eight Days, during which time, the Dog appeared in perfect Health.

The twelfth Experiment.

Eight Days after the foregoing Experiment, the Dog, that was the Subject of it, was kill'd by about half a Drachm of Powder of *Hungarian Vitriol*, dissolved in a spoonful of warm Water, which we injected into the Jugular Vein. The Creature dy'd on the spot, with universal Convulsions. His Heart was found full of grumous Blood reduced to a kind of thick Pap, but without any Clods. The Bile of this Dog was yellow and in little quantity. Not being able to inject it into the Crural Vein of another Dog, because the Vein was too small, we contented ourselves to dip two Compresses in this Bile, which we apply'd and kept under his Skin, by two Wounds made on purpose in this second Dog: There arriv'd no notable Change. We observed in these two Dogs no Marks either internal, or external, of the Plague.

Done at Montpelier the 4th of December, 1721.